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## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification :</b>  <b>Not classified</b>	<b>A1</b>	<b>(11) International Publication Number:</b> <b>WO 00/03581</b>  <b>(43) International Publication Date:</b> 27 January 2000 (27.01.00)
<b>(21) International Application Number:</b> PCT/GB99/02301 <b>(22) International Filing Date:</b> 15 July 1999 (15.07.99)  <b>(30) Priority Data:</b> 9815666.4 17 July 1998 (17.07.98) GB  <b>(71) Applicant (for all designated States except US):</b> SMITHKLINE BEECHAM P.L.C. [GB/GB]; New Horizons Court, Brentford, Middlesex TW8 9EP (GB).  <b>(72) Inventors; and</b> <b>(75) Inventors/Applicants (for US only):</b> BARTON, Barry [GB/GB]; SmithKline Beecham Pharmaceuticals, Clarendon Road, Worthing, West Sussex BN14 8QH (GB). MCNAUGHTON, Heather, Jane [GB/GB]; Dyson Perrins Lab, South Park Road, Oxford OX1 3QY (GB). SCHOFIELD, Christopher, Joseph [GB/GB]; Dyson Perrins Lab, South Park Road, Oxford OX1 3QY (GB). THIRKETTLE, Jan, Edward [GB/GB]; SmithKline Beecham Pharmaceuticals, New Frontiers Science Park South, Third Avenue, Harlow, Essex CM19 5AW (GB).  <b>(74) Agent:</b> GIDDINGS, Peter, John; SmithKline Beecham, Corporate Intellectual Property, Two New Horizons Court, Brentford, Middlesex TW8 9EP (GB).		<b>(81) Designated States:</b> CA, JP, US, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).  <b>Published</b> <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i>
<b>(54) Title:</b> PROCESS FOR PREPARING CLAVAM DERIVATIVES BY USING POLYPEPTIDES HAVING BETA-LACTAM SYNTHETASE ACTIVITY		
<b>(57) Abstract</b>  A process for the synthesis of clavam compounds, in particular clavulanic acid using $\beta$ -lactam synthetase polypeptides and $\beta$ -lactam synthetase polynucleotides.		

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# INTERNATIONAL SEARCH REPORT

International application No.

PCT/GB 99/02301

<b>A. CLASSIFICATION OF SUBJECT MATTER</b>		
<b>IPC6: C12P 17/10</b> According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b>		
Minimum documentation searched (classification system followed by classification symbols)		
<b>IPC6: C12P</b>		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X,P	Chem. Commun., Volume 21, 1998, Heather J. McNaughton et al, "Beta-Lactam synthetase: implications for beta-lactamase evolution" page 2325 - page 2326  --	1-14
X,P	Proc. Natl. Acad. Sci., Volume 95, August 1998, Brian O. Bachmann et al, "Beta-Lactam synthetase: A new biosynthetic enzyme" page 9082 - page 9086  --	1-14
X	CA 2108113 A (GOVERNORS OF THE UNIVERSITY OF ALBERTA), 9 April 1995 (09.04.95)  --	12-13
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.		
* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family		
Date of the actual completion of the international search		Date of mailing of the international search report
5 November 1999		15.12.99
Name and mailing address of the International Searching Authority European Patent Office P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk Tel: +31-70340-2040 Tx 31 651 600 01 Fax: +31-70340-3016		Authorized officer  Carolina Gómez Lagerlöf/Eö

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>WO 9412654 A1 (SMITHKLINE BEECHAM PLC), 9 June 1994 (09.06.94)</p> <p style="text-align: center;">-- -----</p>	1-14

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**INTERNATIONAL SEARCH REPORT**  
Information on patent family members

28/09/99

International application No.

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
CA 2108113 A	09/04/95	NONE	
WO 9412654 A1	09/06/94	AU 5570194 A	22/06/94
		DE 69324163 D,T	23/09/99
		EP 0673432 A,B	27/09/95
		ES 2130392 T	01/07/99
		JP 8504579 T	21/05/96
		US 5869299 A	09/02/99



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